

Introduction

The Utilities element of the Comprehensive Plan focuses on the water, the wastewater, and the storm drainage systems. There are no known issues associated with provision of adequate electrical power or natural gas for the next 20 years. The element shows how the utility systems of the City will be improved to serve the projected growth and land uses to 2020. Water and wastewater system requirements are based on the population projections from Link 2 - Community Profile.

This element consists of three parts:

1. Issues related to utilities;
2. Goals, objectives, and action statements; and,
3. Water and wastewater system assessments and maps indicating major future improvements (one for each system).

Kerrville's future water, wastewater and storm drainage systems are shown in the Future Utilities Map. Future land use decisions should be based on the adequacy of these public facilities. The Map should be used in conjunction with the Future Land Use Map and the Master Thoroughfare Map.

Issues

The Comprehensive Plan Advisory Committee (CPAC), in response to concerns discussed at the community forum and throughout the Master Plan revision process, identified the following issues:

1. **Water Supply and Treatment Capacity.** The demand for water service resulting from projected growth of Kerrville through the Year 2020 is not expected to exceed the capacity of existing resources, (assuming some changes in permitted usages) except during a long-term drought when peak water demands during the summer are approaching the capacity of the system production facilities.
2. **Improvements and Repair of Existing Water, Wastewater and Storm Drainage Systems.** Expansion is necessary to keep pace with growth, and efficiency of the entire system erodes without properly maintaining existing facilities.

What comprises the Water System?

The water system includes supply facilities (wells and surface water), treatment facilities, and distribution system facilities.

What comprises the Wastewater System?

The wastewater system includes gravity flow pipes in the collection system (facilities that receive wastewater from customers and convey it to the treatment plant), pumping stations (typically referred to as lift stations), pressure lines in the collection system, treatment units at the plant, and reclaimed water distribution facilities.

What comprises the Drainage System?

Drainage (or storm water) facilities typically include streets, underground storm drainpipes, and surface channels or swales. Storm water facilities may also include detention ponds and storm water treatment facilities.



The Plateau Regional Water Plan, part of a state plan produced by the Texas Water Development Board, reviewed all water sources for the Kerrville area.

Recycled water is effluent from the wastewater treatment plant.

3. **Groundwater Supply.** Groundwater is an important water source for the City of Kerrville as well as areas outside the City. Measures to ensure future availability of groundwater resources are important to the City's future.
4. **Conservation Practices.** Water conservation is an important factor in water planning. Kerrville shall support the concepts provided in The Plateau Regional Water Plan. Kerrville shall also develop and implement specific water conservation practices to reduce future water supply needs.
5. **Water Recycling.** Recycled water irrigates golf courses, soccer fields and new construction. Recycled water is a valuable resource and additional uses are likely in the future, including the possible use of treated effluent as a source of potable water.
6. **Storm Water Drainage and Discharge.** Population growth and Federal and state legislation will drive the need for the City to address storm water quality, drainage capacity and floodplain issues.

Goals, Objectives and Action Statements

Goals, objectives, policies and action statements were developed based on the identified issues. The following represent a summary of the goals for the Utilities element:

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| Goal 5.1: | Expand the water system capacity to meet projected 2020 demands. |
| Goal 5.2: | Improve water distribution, wastewater collection and storm drainage systems to eliminate problem areas and improve system efficiencies. |
| Goal 5.3: | Coordinate with area entities to help control groundwater production so that future city needs are met. |
| Goal 5.4: | Promote water conservation. |
| Goal 5.5: | Expand the use of recycled water and develop systems for its maximum benefit. |
| Goal 5.6: | Establish the necessary plans and procedures to comply with all storm water drainage, spill and discharge issues. |

The following section defines the major utility goals, objectives, policies and action statements. Future utility decisions should be decided on the basis of satisfying one or more of the city's utility goals and objectives.



GOAL 5.1: Expand the water system capacity to meet projected 2020 demands.

Objective A: Increase the capacity of the water treatment plant and the Aquifer Storage and Recovery (ASR) system to allow increased surface water use within diversion permit constraints.

Objective B: Implement acquisition of water rights or agreements that are needed to ensure that the City has access to surface water required to meet future needs.

Policy: Use the projected 2020 population demands to decide the dimensions of water lines.

Action 5.1.1: Complete and utilize the ASR (ASR #2) and water treatment plant projects currently in progress.

- Complete the ASR well currently being drilled and initiate operation as soon as possible.
- Complete design and construction of the water treatment plant expansion.
- Upon completion of both ASR and the water treatment plant projects, operate the system (to the extent possible as limited by existing surface water diversion permits) such that the ASR facilities are fully utilized.

Action 5.1.2: Investigate the possibility of revising existing Guadalupe River water diversion rights and/or obtaining additional water rights.

- Determine if existing water rights can be revised to permit obtaining more surface water for ASR injection in the winter when the City's water usage is

ASR means Aquifer Storage and Recovery well that inserts treated water into an underground well for later use.

FIGURE 5.1
Water Demand in Kerr County

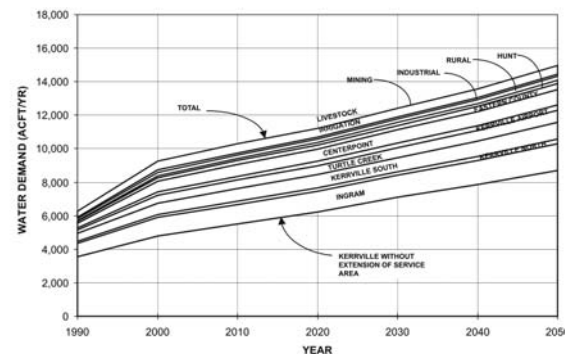
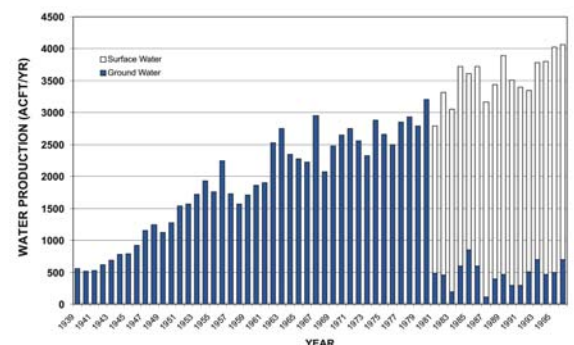


FIGURE 5.2
Historical Water Use, City of Kerrville





low. Current diversion permit structure limits river water withdrawal to less than ASR injection capacity during the winter months.

- b. Examine the following alternative methods of obtaining additional Guadalupe River water rights: (1) direct purchase of water rights, (2) litigate to obtain any identified under-utilized water rights, and (3) purchase land with water rights and re-sell the land while retaining a large portion of the water rights.

Action 5.1.3: Encourage evaluation and consideration of joint or regional water systems where such systems are found to have merit, including economy of scale and system reliability.

- a. Coordinate with the Upper Guadalupe River Authority (UGRA) and other entities and parties on expansion of the water treatment plant.
- b. Maintain ongoing contact with the UGRA and the Guadalupe Blanco River Authority (GBRA), particularly to determine if mutual, common needs or opportunities exist.

GOAL 5.2: Improve water distribution, wastewater collection and storm drainage systems to eliminate problem areas and improve system efficiencies.

Objective A: Utilize technology where it allows improved surveillance or more accurate planning for future improvements and repairs.

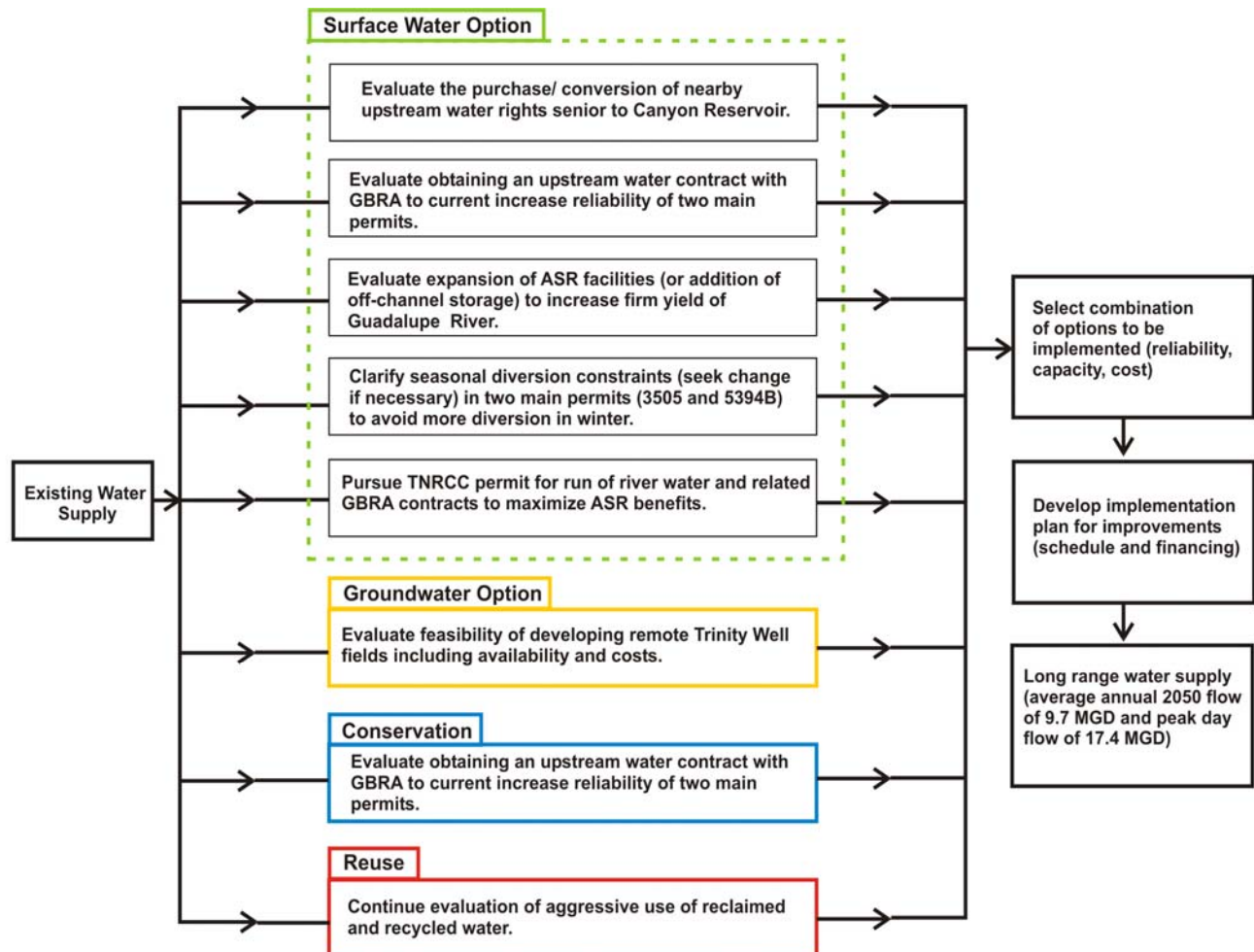
Objective B: Optimize wastewater treatment operations and administration and increase treatment reliability in the Kerrville area.

Objective C: Achieve a wastewater system that has the hydraulic and technological capacity to convey all wastewater, treatment facilities that meet all requirements applicable to discharge or use of recycled water from the plant, and a system that is in excellent condition.

Policy: *Use the bond program and capital projects program to improve all utility systems.*



FIGURE 5.3
Water Study Schematic



Source: HDR Engineering, Inc.

Action 5.2.1: Develop computer simulation models for the water distribution and wastewater collection systems.

Action 5.2.2: Complete specific water distribution and transmission projects in accordance with stated objectives.



- a. Construct additional elevated water storage facilities on east side of City.
- b. Replace Riverhill Subdivision service lines.
- c. Replace undersized main lines on Valley Drive and East Drive.
- d. Improve Hillcrest Addition water pressure.
- e. Build Cully Drive interconnection to improve water transmission.
- f. Replace Main Street valves.
- g. Replace undersized main lines in the Lowry Addition.
- h. Replace undersized main lines in Clairemont Street.
- i. Replace water line in West Main.
- j. Monitor City's system on an ongoing basis to expedite planning for improvements.

Action 5.2.3: Complete specific wastewater collection and treatment projects.

- a. Construct a trunk line along Quinlan Creek.
- b. Replace failing lines in the Westland Place Subdivision.
- c. Rehabilitate and modify the Quinlan Creek lift station to allow advantageous flow diversions in the system.
- d. Implement wastewater treatment plant headworks and clarifier unit improvements.

Action 5.2.4: Complete specific storm water drainage capacity projects.

- a. Construct Riverhill Boulevard drainage system.
- b. Construct Westland Place Addition drainage improvements.
- c. Construct Lois Street drainage improvements.



GOAL 5.3: Coordinate with area entities to help control groundwater production so that future City needs are met.

Objective A: Manage withdrawal of groundwater to ensure that usage is consistent with the needs and interests of the City and surrounding area.

Objective B: Promote (and participate in where applicable) projects that reduce use of groundwater in the area around the city.

Policy: *Create interlocal agreements for the city of Kerrville to work with other political jurisdictions to manage groundwater production.*

Action 5.3.1: *Participate in planning related to ground water production in Kerr County.*

- a. Coordinate with and provide input to the Headwaters Groundwater Conservation District (HGCD).

Action 5.3.2: *Coordinate with the Upper Guadalupe River Authority (UGRA) and other entities and parties on expansion of the water treatment plant.*

GOAL 5.4: Promote water conservation.

Objective A: Ensure that water is used efficiently.

Objective B: Continue periodic review of the drought management plan and implement changes as deemed necessary.

Objective C: Conduct periodic review of tiered water rates to maximize revenue and reduce consumption where appropriate.

Objective D: Promote private water conservation by individuals and businesses.

Objective E: Discourage development or businesses that require relatively high water use.

Policy: *Analyze and develop policies, programs and awareness efforts designed to conserve water.*

Action 5.4.1: *Implement leak detection and slippage assessment program to reduce waste of water.*

Water Conservation
means extending the existing water supply and reducing future water demand increases.



Xeriscaping is derived from the Greek word 'xeros' for 'dry,' and refers to the creation of a garden that uses less water than traditional landscaping.

Action 5.4.2: Assess supply and demand situation after each drought period for potential improvements to drought management plan.

Action 5.4.3: Update the City's water rate model annually to ensure that water rates are set appropriately based on the cost of service and need for conservation.

Action 5.4.4: Provide incentives for xeriscaping, low water consumption appliances, and rainwater collection that will induce personal and business investment in water conservation.

Action 5.4.5: Participate in and promote education of the public regarding water conservation.

Action 5.4.6: Prepare a city policy regarding high water-use business and development.

GOAL 5.5: Expand the use of recycled water and develop systems for its maximum benefit.

Objective A: Maximize use of recycled water available to the City.

Objective B: Establish potable water as the priority use for recycled water.

Policy: *Support efforts to utilize recycled water in situations that do not infringe upon health, safety and welfare.*

Action 5.5.1: Implement maximum use of recycled water.

- a. Review existing contracts to assess priority usage during drought periods.
- b. Ensure that control of effluent from the wastewater treatment plant is addressed in future agreements.

Action 5.5.2: Complete a preliminary economic feasibility study to determine the cost and lead time required to construct a treating facility to produce potable water from the wastewater plant effluent discharge.

- a. Assess strategies (such as partial construction) to reduce construction lead time (in the event of a long term drought).
- b. Prepare a recommendation for the City Council based on the feasibility study.



Action 5.5.3: Promote potable use of recycled water through public education programs.

GOAL 5.6: Establish the necessary plans and procedures to comply with all storm water drainage, spill and discharge issues.

Objective A: Develop plans and procedures to comply with Federal and state storm water discharge quality requirements.

Objective B: Provide adequate storm water drainage capacity for ongoing and future development.

Objective C: Ensure that floodplains and floodways are preserved as development progresses.

Objective D: Provide rapid response to contain hazardous/inflammable material spills.

Policy: *Encourage a storm water control system that protects the natural and built environment.*

Action 5.6.1: Budget funds for TPDES Phase II Storm Water Permitting and establish a strategy.

Action 5.6.2: Ensure that design manuals and master plan developed in 1983 are consistent with projected land use and future development as finalized in the Comprehensive Plan.

Action 5.6.3: Evaluate area storm water drainage capacity.

Action 5.6.4: Address regional detention in undeveloped areas as an alternative to individual detention ponds at each development site. Evaluation should assess the following:

- a. Major future drainage improvements to each watershed.
- b. Potential locations for regional detention.
- c. Costs of proposed improvements and detention projects.
- d. Use of drainage impact fees for new construction.

Action 5.6.5: Review current FEMA floodplain mapping, compare with Comprehensive Plan projections of land use, and address justified revisions to land use plan to

FEMA, or the Federal Emergency Management Agency, is the entity that publishes Flood Insurance Rate Maps and administers the National Flood Insurance Program.



accommodate and preserve floodplain and floodway corridors.

Action 5.6.6: Create a City-regulated method of reporting and responding to spills of hazardous/inflammable materials.

Water and Wastewater System Maps

The water and wastewater system maps, as displayed in **Figure 5.4, Water Distribution System with Future Improvements** and **Figure 5.5, Wastewater Collection System with Future Improvements**, show general locations and information regarding extension of major lines in the water and wastewater systems. Action items recommended in this link include development of a computer model of the water distribution system and an updated evaluation of major collectors in the wastewater collection system. Results of the action items will better define distribution system extension line sizes, and may indicate that relief mains and/or lift station modifications are needed in the wastewater collection system to allow extension of wastewater mains.

Design of major extensions of either the water or wastewater system should include a preliminary design analysis to determine capacity requirements and the impact of extensions on existing facilities.